



THE UNIVERSITY OF CHICAGO

Departments of Mathematics and Statistics
ALGEBRAIC GEOMETRY SEMINAR

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Geometry of Wachspress Surfaces

WEDNESDAY, November 20, 2013, from 4:30–6:00 PM
312 Eckhart Hall, 5734 S. University Avenue

ABSTRACT

Let P_d be a convex polygon with d vertices. The associated Wachspress surface W_d is a fundamental object in approximation theory, defined as the image of the rational map w_d from P^2 to P^{d-1} , determined by the Wachspress barycentric coordinates for P_d . We show w_d is a regular map on a blowup X_d of P^2 , and if $d > 4$ is given by a very ample divisor on X_d , so has a smooth image W_d . We determine generators for the ideal of W_d , and prove that in graded lex order, the initial ideal of $I(W_d)$ is given by a Stanley-Reisner ideal. As a consequence, we show that the associated surface is arithmetically Cohen-Macaulay, of Castelnuovo-Mumford regularity two, and determine all the graded betti numbers of $I(W_d)$.

This is joint work with C. Irving, Santa Clara University.

Organizers:

For further information on this event, please email Lek-Heng Lim at lekheng@galton.uchicago.edu or Madhav Nori at nori@math.uchicago.edu.

UCAGS Seminar URL: <http://www.stat.uchicago.edu/~lekheng/ag.html>